Chapter 13

Critical Analysis of and Future Directions for the 5 A Day Program

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INTRODUCTION

The previous 12 chapters of this monograph have provided details about the national 5 A Day for Better Health Program from its inception in October 1991 to the winter of 2000. The information covered has included the Program's origins, the structure of the public/private partnership between the original and primary partners (the National Cancer Institute [NCI] and the Produce for Better Health Foundation [PBH]), descriptions and outcomes of the media efforts, examples of State and industry initiatives, evaluations of the national Program and research results from the funded 5 A Day randomized community-based trials, and a glimpse of international initiatives catalyzed by the U.S. Program. Because evaluation data of the national Program effort are still being analyzed, only preliminary results have been presented in this document. Final results will be published in peer-reviewed journals.

This chapter summarizes the major 5 A Day Program accomplishments and limitations as well as recommendations for the future. Because the previous chapters have provided extensive details on the Program's accomplishments, they are merely highlighted in this chapter. More attention is focused on limitations in order to give readers insight into some of the financial and political dynamics of such an effort. This chapter also discusses the shifts in the knowledge base of diet and cancer, as well as behavioral science over the past decade, to establish a context for suggesting future directions for the 5 A Day Program. It is rare for a nutrition program to have established such an extensive infrastructure and to have sustained it for such a long time (9 years at this writing). The challenges ahead involve how to keep the program fresh, maintain momentum, and intensify efforts to reach the multiple segments of the population that have not yet increased their vegetable and fruit intakes to the recommended levels.

PROGRAM ACCOMPLISHMENTS

A 5 A Day Program expert evaluation group recently completed a rigorous scientific review of the Program and recommended that it receive greater support and expand its level of integration with existing efforts across the country (Potter et

al., 2000). In its first 9 years, the Program has accomplished its two main objectives: 1) to increase public awareness of the importance of eating five or more servings of vegetables and fruit every day and 2) to provide consumers with specific information about how to incorporate more servings of vegetables and fruit into daily eating patterns. The program has also helped improve national consumption rates, moving closer to its ambitious goal of increasing average vegetable and fruit consumption to five servings a day. Table 1 presents the accomplishments of the 5 A Day Program organized by selected categories. Following are a few highlights of the 5 A Day Program from the table, organized by outcomes and process.

Table 1. Accomplishments of the 5 A Day Program, 1991-2000

This table presents the program accomplishments by selected categories. The first five categories represent the structure and implementation of the program. Awareness, consumption, and research represent some of the program outcomes, and the remaining categories indicate how the program addressed the theoretical constructs upon which it was based.

Category	*Accomplishments*
Public/Private Partnership	• Established between NCI and PBH in October 1991 (Chapters 1, 5). • Maintained through consistent collaboration.
Program Infrastructure	• Created license agreements with and developed guidelines for growers, shippers, merchandisers, commodities, supermarkets, branded products, food services, health departments, uniformed services, and the Indian Health Service (Chapters 2, 5). • Developed State and local coalitions to implement 5 A Day at the local level; in all 50 States (and 5 territories), the State health officer appointed a State 5 A Day coordinator (Chapter 3). • Developed written agreements for collaboration developed with USDA, CDC, and ADA (Chapter 2).
Strategic Planning	• Conducted jointly by PBH and NCI (1992 and 1996). • Made joint mission and vision explicit, assisting industry and Government to understand each other's needs. • Many established objectives were accomplished, such as recruiting industry members, organizing promotional activities, organizing media efforts, etc.
Implementation	• State and local coalitions determined priorities for interventions that were appropriate for their populations (Chapters 3, 4). • Annual National 5 A Day Week in September established in 1993 to create a national focus of effort. • Agreement with ADA also created a focus on the message during National Nutrition Month in March. • Guidelines for implementation for all licensees were based on theories of behavior change and kept all licensees focused on the same strategies (Chapters 2, 5). • Research grants provided proven strategies for interventions in various channels (Chapters 8 to 11). • 1992-1995: three to four waves of materials developed by PBH for supermarkets in 3,000-5,000 stores. • 1996-1998: four waves in 1,500 stores. • 1999-2000: five waves in 2,000 stores.
Media	• Communications strategies, based on social marketing, have produced millions of gross media impressions over 9 years. • Newspaper coverage for each seasonal package from NCI reached 4 to 10 million people (Chapter 6). • Media Analysis System for Health (July 1992 to October 1993): 396 million impressions (Chapter 6). • 450 radio stations in 40 states and more than 50 TV stations nationwide carry daily or weekly Do Yourself a Flavor inserts, which uses 5 A Day messages (Chapter 6).

Table 1. Accomplishments of the 5 A Day Program, 1991-2000 *(continued)*

Category	*Accomplishments*
Awareness of the 5 A Day Message	• Increased from 8 percent of population in 1991 (baseline survey) to 19 percent of the population in 1997 (followup survey) (Chapter 7). • Awareness in women increased from 11 percent in 1991 (baseline survey) to 27 percent in 1997 (followup survey) (Chapter 7). • Most health professionals and popular health magazines are aware of the 5 A Day message.
Skills Development	• Materials include information on how to purchase and prepare vegetables and fruit; to make them more accessible at home; to choose better when dining out; and to make them more convenient. • Interactive supermarket tours. • Taste-testing and other interactive strategies used in schools, supermarkets, worksites, churches, WIC, and other community settings. • More than 2 million "5 A Day Adventure" CD-ROMs for grades 3 through 5 have been distributed to schools across the country, teaching children skills in preparing meals (Chapter 5).
Motivation	• Materials and media provide motivational messages about reducing the risk of cancer and other chronic diseases, as well as looking better, feeling better, being more active, and having more energy. • Role models (e.g., champions, physicians, and sports figures) demonstrate how to incorporate more vegetables and fruit into daily life (Chapter 6). • Contests and incentives have been used to great effect.
Environment	• Many commodity groups and companies that make branded products have developed low-fat recipes that meet the 5 A Day criteria. • More than 500 5 A Day recipes have been developed. • Worksite cafeteria and school meals have been modified to include more vegetables and fruit and more low-fat vegetable dishes. • 5 A Day materials are periodically displayed at the point of purchase in supermarkets, school lunchrooms, worksites, and restaurants. • Catering policies have been implemented in some worksites.
Social Support	• Peer education models have been successfully implemented (Chapters 9, 11). • Materials suggest ways to include family members and friends. • 5 A Day Week challenges individuals to assist each other to reach the 5 A Day goals.
Consumption	• Helped increase average national consumption levels of vegetables and fruit from 3.75 servings a day in 1991 to 3.98 servings a day in 1997 (5 A Day baseline + followup surveys; respectively)
Research	• Nine randomized community-based research grants demonstrated that the 5 A Day message could increase vegetable and fruit consumption by children and adults in schools, worksites, churches, and the WIC program (Chapters 7 to 11). • 31 evaluation grants to 5 A Day programs within the States in 1994-1999 demonstrated the ability of existing channels to effectively implement 5 A Day initiatives (Chapters 4, 7).
Award	• The national 5 A Day Program received the President's Circle Award for Nutrition Education in 1995 from the ADA and the American Dietetic Association Foundation.
Dissemination/ Norms	• The 5 A Day Program has been incorporated into many initiatives at the local, State, and national levels. (For example, it is used in WIC programs, child care food programs, food pantries, farmers markets, school lunch programs, school classrooms, worksites, the Boy Scouts, grocery stores, and restaurants, and many newspapers and magazines continue to cover the program.) • The program is being used as a model for similar efforts in at least 25 other countries (Chapters 5, 12). • The 5 A Day message is now used in most nutrition programs and in many research programs and is considered part of the cultural norm. • The American Cancer Society is working with NCI to disseminate the African-American churches research project; the AMC Cancer Research Center has a grant to disseminate the best practices of the worksite research grants.

Outcomes

- Proved that randomized community-based 5 A Day behavioral interventions could increase consumption, with differences between intervention and control groups averaging 0.5 serving in adults and 0.7 in youth (Potter et al., 2000, pp. 37-39) a day (see Chapters 8 to 11);
- Contributed to the modest increase in national mean vegetable and fruit consumption levels (Potter et al., 2000, pp. 34-36);
- Between 1991 and 1997, increased awareness from 8 to 19 percent in the general population of the need to eat five or more daily servings of vegetables and fruit;
- Increased sales in vegetable and fruit products through supermarket and media efforts that were evaluated (see Chapter 5);
- Demonstrated that State health agency partners could effectively implement 5 A Day programs in the real world, with measurable quasi-experimental effects on knowledge and consumption (see Chapter 4);
- Affected national norms as evidenced by the spread of the message, materials, and strategies into the trade press, the national press, television and radio, popular magazines, offices of health professionals, worksites, schools, supermarkets, research proposals, and low-income food-assistance service programs;
- Stimulated community-based research in nutrition and behavior;
- Affected environments by the inclusion of more vegetables and fruit in schools and worksites;
- Led to more low-fat vegetable and fruit recipes being developed by vegetable and fruit industry members; and
- Became a template for similar programs in other countries and for other nutrition campaigns, such as the promotion of whole grains.

Process

- Established and maintained a public/private partnership between the vegetable and fruit industry and a respected Federal Government research institute;
- Licensed all State health departments as partners in each State to create coalitions that in turn implement the 5 A Day Program at the State and local levels;
- Expanded these partnerships to include populations not covered by State jurisdiction (e.g., residents of American Indian reservations and staff of military bases);
- Expanded industry membership to include a broad spectrum of participants, including growers, marketers, suppliers, retailers, merchandisers, food-service operators and suppliers, and health insurance companies;
- Developed effective implementation strategies based on accepted theories of behavior change; and
- Sponsored effective media efforts in supermarkets and wholesale markets through CD-ROM and Internet communications, as well as through other venues.

Through accomplishing its objectives and moving progressively toward its goal, the 5 A Day Program has had powerful effects on the crafting of nutrition messages, nutrition research, nutrition education and service programs, and cultural norms. The Program provided leadership to all 50 State health agencies and 5 territories by focusing interventions on a single, simple, positive message that is easier to execute and measure than most nutrition messages (see Chapter 1 for more discussion on the strategy of the simple message). This innovation provided an example for the marketing of other nutrition messages, such as the need to eat more grains. By promoting the 5 A Day message in the context of a high-fiber, low-fat diet, the program demonstrated that it was possible to focus on a simple message and retain awareness of the total dietary pattern.

In addition, many researchers looking for a feasible nutrition intervention could easily incorporate the 5 A Day message, because the message was simple and a behavioral model for intervention was available. This fact helped to increase the number of nutrition research applications in cancer prevention and control. (Funded community-based nutrition research grants at NCI increased from 5 in 1990 to 47 in 1998; at least half of these include the 5 A Day message [Human Nutrition Research Information Management System, 2000a].)

The 5 A Day Program has enhanced nutrition education and service programs by inviting these programs to participate in State and local coalitions, thereby providing access to the public/private partnership, materials, media, and research efforts. As a result, the message has been highlighted in other programs, such as the U.S. Department of Agriculture's (USDA's) school lunch program and the Team Nutrition Campaign, the Food Stamp Program, the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), and the Child Care Food Program. The 5 A Day Program worked with the American Dietetic Association (ADA) to incorporate the message into National Nutrition Month (March) and other ADA initiatives. The Program has been adopted by U.S. military bases worldwide through a license agreement with NCI. A similar partnership with the Indian Health Service has brought the message to American Indian reservations throughout the United States.

In addition, many industry members have modified products and materials to fit the 5 A Day criteria, contributing to increased environmental support for healthy behaviors. The message is now generally accepted in the United States, incorporated into most nutrition programs, and emulated in other countries. This is the type of norm modification most programs hope to create.

The Program was able to achieve its objectives in spite of its limitations, which are noted below. Its success is a tribute to a good intervention model (which emerged from a State health department), to dedicated industry and public health leaders throughout the country who have made the Program work, and to a public that has been willing and able to change dietary patterns.

PROGRAM LIMITATIONS

Resources

The 5 A Day Program's effect is even more impressive when funding limitations are considered. Because NCI is a research institute, most of its resources are dedicated to research rather than to public education or technology transfer. Therefore, NCI has provided no funding to the State coordinators and coalitions at the State level for Program implementation, severely limiting the Program's reach and impact. State health departments initially undertook the responsibilities of partnership without any financial resources from NCI. Funds were, however, provided over 2 years by the Centers for Disease Control and Prevention (CDC) for some programs (see Chapter 4 for more information on State funding).

Until the past few years, staffing at NCI averaged two full-time equivalents. In the early years, inadequate numbers of staff made it difficult to meet the demands of coordinating partners and licensees, maintain current activities, and create new efforts for the future. In addition, there were no funds for evaluation of the national effort during the Program's first 3 years, and the plan outlined in Chapter 7 was not implemented until 1994. In the interim, staff at NCI and PBH tracked as many process variables as possible (e.g., media and membership).

PBH was launched with $433,000 contributed by individual companies. These dollars were used to staff the PBH office and to implement communications programs. On average, the funding for the PBH office per year has been approximately $1.3 million, with an average of eight full-time staff members. The range in funding has been from $433,000 in 1991 to $2.2 million in 1999. Of the total budget, money spent for PBH communications programs has averaged $450,000 per year. Although the industry contributed the equivalent of about $18 million a year in redirected advertising (mostly print ads in the weekly supermarket sections and signage), the money available for extensive national communications programming has been minimal. As a result, the PBH office spent most of its energies from 1997 to 2000 raising funds from other industry sources. The Program has been consistently supported by only a small core of industry members. However, over time, funds and staff at PBH and NCI have increased, providing an optimistic direction for the future.

Partnership Issues

Challenges arose during the life of the Program as a result of the administrative structure at NCI, the operational differences between industry and Government, and issues of trust among partners. Although the 5 A Day Program director in the

Division of Cancer Prevention and Control (DCPC), now called the Division of Cancer Control and Population Sciences (DCCPS), was the titular head of the NCI segment of the partnership, funding for the Program's media component was provided directly to the Office of Cancer Communications. Therefore, what was initially envisioned as a two-way partnership between NCI and PBH became a three-way challenge, and the NCI media effort developed somewhat independently from the rest of the NCI Program. After the partnership's first year, the industry perceived a need to develop its own media effort to complement the Government's effort, which was moving more slowly and conservatively than the industry desired. The fact that the three partners were in different physical locations added to the challenges of coordination. The two governmental components were in two contiguous towns, and PBH was in a neighboring State. To help keep the Program coordinated, periodic conference calls and face-to-face staff meetings of all the partners were held in different locations. Each quarter, partners rotated responsibility for organizing the calls and preparing minutes.

A major issue for the industry partners was the slow speed of decisionmaking and action on the part of the Federal Government. Most actions required Federal approval from a number of layers of authority. For example, interagency review of 5 A Day print materials or legal review of initiatives was required to ensure that educational materials were consistent with national nutrition policy and that the Government would not be perceived as endorsing any single branded product or company. A major issue for the Government was ensuring that all partners abided by the Program criteria for logo use to prevent trademark infringements. For example, the logo could only be placed on vegetables and fruit without added fat or sugar (see Chapter 2 for the criteria). Some members felt constrained by these criteria, which also limited participation by some members of the frozen and canned industries, creating tension within the overall vegetable and fruit industry.

For both the industry and the Government, the first several years were challenging. To maintain funding, PBH needed to impress its industry supporters by being consistently visible in the national and trade media and by obtaining licensee feedback indicating the Program's positive impact. Because this was the first long-term public/private partnership of this nature for the National Institutes of Health (NIH), there was great concern on the part of the Government about any potential conflicts of interest, especially at a time when the Food and Drug Administration (FDA) was developing new regulations for the food industry concerning health claims on food labels. Therefore, Program staff members worked with other governmental agencies to carefully consider the effect of regulations on 5 A Day Program policies for consumer communications and product labeling.

When issues could not be resolved among Program staff, they were referred to the coordinating committee (see Chapter 2), which was made up of industry and NCI representatives. When industry members of the coordinating committee were dissatisfied with results, they would consult with the director of the DCPC for further discussion.

Over time, and with the maturing of the Program, many early concerns, such as Program criteria and media coordination, have been resolved. The director of the 5 A Day Program currently oversees NCI's media effort. The two staff members who direct the Program, one from NCI and one from PBH, both have advanced degrees in nutrition, providing common ground for collaboration. Furthermore, PBH is now independent of its sponsoring parent organization, the Produce Marketing Association, thereby reducing some of the tension among the produce trade organizations.

Petition to Modify Program Criteria

Occasionally, unexpected programmatic issues arose. For example, one of the State coalitions believed that the fat criteria (see above) were too strict for both its industry members and lower income populations, and in 1994, that coalition petitioned the national Program to modify those standards. To resolve the issue, a committee of external experts, including equal numbers of industry and State coalition representatives, was convened to review the criteria, the scientific evidence bearing on the issue, and the ramifications of changes in the criteria. An effort was made to make this review as objective as possible, inviting persons with diverse views on the subject.

Examples of some of the questions addressed were whether the 5 A Day Program should continue to maintain criteria that were more stringent than some of the recently implemented requirements of the National Labeling and Education Act and whether the criteria for promoting 5 A Day products should be modified to allow some added fat and sugar (see Chapter 2 for these criteria).

The decision of the majority of panel members was to allow some minor modifications but to maintain current criteria because the disadvantages of changing the criteria outweighed the advantages. The perceived advantages were 1) allowing more products to be promoted and 2) improving the ease with which frozen products could be included. Disadvantages included 1) the loss of the simplicity and clarity of the Program's message; 2) the lack of scientific criteria upon which to base cutoffs for ingredients such as sugar; 3) the introduction of a regulatory component to the Program without adequate staff to review new products to determine their eligibility; 4) the potential of promoting increased fat intakes, which were thought to increase cancer risk; and 5) the loss of a Program intention to modify the environment by encouraging industry to produce more products that met the Program's high standards.

The strictness of the criteria for a Program such as 5 A Day is an issue that has strong arguments on both sides. On the one hand, some would argue that convincing the population to eat more vegetables and fruit in any form would be an improvement over current consumption levels. If the criteria are too strict and fewer industry members participate, the funding and potential reach of the Program could be limited. As a result, fewer people would increase their consumption. On the other hand, if the criteria are not strict enough, the Program might lack credibility and be viewed by the public as just another marketing ploy by the industry. Or worse, the Program might contribute to increased fat, sugar, sodium, and calorie intakes, thereby potentially harming rather than helping the population. From the public health perspective, stricter criteria are better, but they create tensions and tradeoffs in the degree of industry participation.

Collaborating with other governmental and professional organizations also can present challenges of ownership. Over time, the Program has developed written agreements with the USDA (which operates all Federal school nutrition programs, WIC, and other food assistance programs), CDC, ADA, and other organizations to pursue joint 5 A Day efforts. Although these agreements work well, for other programs to take ownership of the 5 A Day message, they must see a clear and perhaps unique role for themselves, making it their Program.

Strategic Planning

Another important component of the Program is the strategic planning process. In 1992, the first such process was directed by the industry and resulted in a set of measurable objectives for growth, communications, supermarket promotions, research, and evaluation that provided guidance for the first few years of the Program. An important aspect of this process was the discussion of values and Program mission. This discussion made explicit the areas of convergence and divergence of the industry and governmental perspectives, allowing an understanding of each other's needs. Strategic planning with NCI was repeated in 1996. In 2000, PBH did its own strategic planning. As a result of the recent review of the national 5 A Day for Better Health Program (Potter et al., 2000), a series of recommendations has been made, the most significant of which is for national Program expansion. Strategic planning to support this outcome is underway in 2001.

Initial Industry Concerns

Uniform support for the 5 A Day Program at its initiation did not exist among members of the vegetable and fruit industry. Many thought the Program could not work for a variety of reasons, including its generic nature (i.e., not brand-specific), limited funding, and lofty goals. In addition, there were turf issues among the various sectors and trade associations in the industry. A June 1993 article in the trade newspaper *The Packer* discussed the skepticism.

A senior food advertising executive in San Francisco was quoted as saying: "To change the American diet is a massive project…Imagine 5 A Day's $800,000 budget stacked up against the $40 million spent by the U.S. beef industry or the $200 million spent by dairy farmers. Then there's the billions spent by brand marketers of chips,

cookies, frozen snacks, fast food burgers, and soda … $800,000 is what Coke spends in Los Angeles in 3 days."

The Packer article continued: "Skeptics say the 1.5 year old program not only is painfully underfunded, but its message has been diluted with inclusion of frozen and canned produce. What's more, they say the very nature of the fresh industry's suppliers and receivers is too competitive to allow solid support of a generic promotion." Other concerns mentioned were that some executives doubted that the generic campaign would benefit their companies and that only 150 organizations out of a possible 16,000 to 20,000 were contributing.

Years later, the same limited funding issues remain. However, the Program continues to be supported by a core of the fruit and vegetable industry members who can now see more clearly the value of, and how to participate in, a generic promotion. Policy issues, such as nutrition labeling, and advocacy to increase Program capacity seem to be topics that cut across traditional industry divisions, creating further reasons for collaboration.

Since the Program's inception, the public health landscape relative to diet and cancer and community-based behavioral science has evolved, and the vision for the Program's potential future needs to be placed within this current context.

The Current Public Health Landscape

First, after two decades of increases, cancer rates in the United States declined between 1990 and 1995 (Bal et al., 1999). Cancer incidence rates for all sites (combined) decreased an average of 0.7 percent ($p < 0.05$) per year and mortality rates decreased an average of 0.5 percent ($p < 0.05$) per year over the 5-year period. Although improvement in diet is not included by Bal and colleagues (1999) as one of the potential reasons for such a decline, at least two investigators have presented data that support diet as a contributor to these improvements (Wynder and Cohen, 1997). Furthermore, if two-thirds of cancer deaths can be linked to tobacco use, poor diet, obesity, and lack of exercise, then diet and exercise together would appear to be the obvious areas for future research and Program development. The 5 A Day Program is in the right place at the right time if its leaders can strategically take advantage of its position.

Second, the science base indicating a protective effect of vegetables and fruit for the prevention of cancer has become stronger, the appropriateness of the 5 A Day recommendations has been upheld, and a number of analyses since Doll and Peto (1981) have confirmed that poor diet causes about one-third of all cancers in the United States (Ames et al., 1995; World Cancer Research Fund, 1997; Doll, 1992; Willett, 1999; Byers, 1999; Bal et al., 1999). Slowly, the biomedical community is acknowledging that diet may be as important as smoking in the cause and prevention of cancer (Willett, 1999; Bal et al., 1999). An inverse association between vegetable and fruit consumption and a variety of cancers has been observed in more than 200 case-control and cohort studies (Willett, 1999; World Cancer Research Fund, 1997). In spite of the fact that several controlled clinical trials have not confirmed that single or multiple micronutrients or phytochemicals are protective, Dr. Tim Byers (1999) stated that: "There remains compelling evidence that eating five or more servings of fruits and vegetables per day can substantially reduce the risk of some of the most commonly occurring cancers in the United States. The combined effects of nutrients as contained in the mixtures commonly known as whole foods seem to be more effective in reducing cancer risk than are nutrients contained in supplements." Therefore, the science base for a program such as 5 A Day is more supportive than ever, and its potential for developing intervention designs that work in real life (in communities, using existing resources) is especially valuable, since expensive food-based clinical trials may not be funded.

Third, the science base for large-scale population-based interventions is stronger than it was a decade ago. In the late 1980s, when the national 5 A Day Program was being shaped, the American Stop Smoking Intervention Study Trial (ASSIST) was just being created and tested as a technology transfer mechanism for the previous phases of NCI-sponsored tobacco research. The well-funded ASSIST model called for a much more complete set of interventions than was possible for the 5 A Day Program, including coalition development, policy, advocacy, campaign initiatives, and media. These components operated simultaneously in a variety of intervention channels and were tailored to different population segments. A feature of ASSIST was a highly structured national and State

coalition infrastructure, as well as explicit operational phases for needs assessment and planning, execution, and evaluation. Each State coalition was funded at about $1 million annually. Thus, by the late 1990s, the science and practice of tobacco control had come together sufficiently to result in national recommendations for components needed in comprehensive State programs (CDC, 1999).

Bal and colleagues (1999) have maintained that reducing the prevalence of the quantitatively equivalent cancer-risk factors of tobacco use and poor diet require a fundamental shift in social norms and, therefore, a similar paradigm for the nature and scope of interventions. However, the funding of tobacco-control efforts has far surpassed funding for dietary change, especially since the settlement between States and the tobacco industry. All nutrition research at NIH—much of it basic research—comprises 3.9 percent of the budget, or about $495 million of NIH's $12.8 billion 1998 fiscal-year budget (Human Nutrition Research Information Management System, 2000b). Thus, funding must be increased before comprehensive nutrition intervention programs, perhaps similar to ASSIST, can be established, with the hope of sizable increases in the national consumption of vegetables and fruit.

In addition, it should not be forgotten that the vegetable and fruit industry has limited resources compared to other sectors of the food industry (see the "Initial Industry Concerns" section above and Appendix B). As a result, the sizable resources available to advertise less healthy foods that often supplant vegetables and fruit in the diet make it difficult for the more healthy messages to effectively influence the public (see Chapter 6).

With this background in mind, the following section makes recommendations for the future vision of the national 5 A Day Program.

LOOKING FORWARD: A VISION FOR THE FUTURE

Recommendations From the NCI Scientific Review of the 5 A Day Program

During the year 2000, as mentioned at the beginning of this chapter, the 5 A Day Program underwent a detailed scientific review at NCI. The charge to the scientific review committee was 1) to review and evaluate the science underlying the Program, implementation and accomplishments of the Program, and the degree to which the Program met its goals and objectives; 2) to make recommendations to NCI about the future conduct of the Program; and 3) to articulate NCI's role in large, coordinated efforts to promote healthy eating. The following section includes the recommendations made by the scientific reviewers to NCI for the future.

Overall Recommendations

- That NCI continue the 5 A Day Program as a multifaceted program to support research and programs to promote increased vegetable and fruit consumption;
- That NCI continue to lead the Program and ensure that it has a director with high scientific credibility and appropriate expertise;
- That NCI partner more closely with USDA to better focus dietary guidelines and to promote research that will encourage vegetable and fruit consumption;
- That NCI partner with CDC to develop and manage State-level 5 A Day programs; and
- That NCI partner with other NIH Institutes to
  - Promote research on the role of specific vegetable and fruit components in lowering disease risk;
  - Promote methodologic and applied behavioral research;
  - Expand awareness of other benefits of vegetables and fruit; and
  - Develop a surveillance plan to monitor vegetable and fruit consumption (including CDC and FDA).

Media and Message Delivery

- That 5 A Day remain a credible information source, allowing better navigation through the fragmented and unreliable message environment surrounding food, nutrition, and health;
- That direct expenditures and leveraged resources furthering delivery of the 5 A Day message be increased;
- That NCI reinvent the 5 A Day message on a regular basis, with attention to reaching minorities and low-income groups;

- That the Program devote additional resources to a variety of media strategies, including a media relations effort;
- That the Program reconsider its channel-use strategy, with a particular focus on new media and tailored communications and how media channels may be used to reach lower socioeconomic-status groups and disadvantaged populations; and
- That NCI and its partners develop a package of media evaluation approaches that are consistent, simple, complete, and affordable.

Industry and the States

- That NCI's collaboration with PBH be continued and expanded;
- That NCI use its relationships with industry to ensure that vegetables and fruit become more available to high-risk and underserved communities; and
- That NCI increase resources, staffing, and expertise to the States for dissemination, monitoring, and evaluation of the Program.

Minorities and the Underserved

- That NCI, in partnership with relevant organizations, develop operational strategies that are aimed at understanding and reducing disparities among ethnic groups and across educational and socioeconomic differences.

Evaluation

- That NCI should continue to take the lead in evaluating the effectiveness of the Program and that this evaluation must include extensive involvement of the States and
- That NCI undertake a comprehensive evaluation of each of the 5 A Day components: media, research, and all partnerships.

Research

NCI should maintain and support intramural and extramural research in the following areas:

- Dissemination methods;
- Behavior change, including
  - Research into the development of more effective dietary intervention programs;
  - Studies of when children and adolescents develop food preferences;
  - Ways to develop supportive environments and to increase availability of vegetables and fruit;
  - Randomized controlled trials;
  - Interventions for middle and high school students; and
  - Policy on ways to establish an optimal environment for making informed food choices in a free market economy;
- Environmental influences on dietary behavior and behavior change;
- Mechanisms by which vegetables and fruit reduce cancer risk;
- Influences on food choice; and
- Methods for measurement of dietary behavior.

Surveillance

NCI, in partnership with other relevant Federal agencies, should coordinate, facilitate, and strengthen surveillance and monitoring of

- Vegetable and fruit consumption;
- Psychosocial mediators of dietary behavior change; and
- Possible environmental mediators of dietary behavior and behavior change.

Produce for Better Health Foundation

The industry needs strategies for engaging and receiving resources from a higher percentage of the more than 16,000 members of the industry, as well as for continuing to gain support of complementary industries, while at the same time maintaining the Program's integrity. PBH also should partner with State 5 A Day coalitions, working collaboratively to incorporate both State and PBH objectives. PBH might expand its efforts to make available high-quality educational materials developed by the State coalitions.

It should be noted that PBH has provided powerful leadership in shaping national nutrition policy over the past few years, and these efforts should be continued. For example, PBH staff and industry members provided testimony for the U.S. Department of Health and Human Services (DHHS) on the development of the *2010 National Health Promotion and Disease Prevention Objectives for the Nation* (DHHS, 2000) and for the recent revisions in the National Dietary Guidelines (USDA/DHHS, 2000). PBH has also funded efforts

to provide the latest information on phytonutrient contents of vegetables and fruit to the Government. In addition, efforts have been made to increase funding for the 5 A Day Program through the Federal budget process. In the future, PBH members at the State level might also work proactively with State legislatures to develop funding streams for the program at that level.

States

State health agencies have done an excellent job through the years of incorporating the 5 A Day message into existing programs, such as WIC, and of garnering funds to support targeted 5 A Day projects. Funds have come largely from the Preventive Health and Health Services Block Grants and, more recently, through the Food Stamp Program initiative for the development of nutrition networks. These funds for implementing nutrition education and services, along with those provided by NCI and CDC to evaluate projects, create effective programs that can be used nationwide to increase consumption within the 5 A Day network of State programs.

Research and Diffusion

Institutes at NIH could encourage incorporation of the 5 A Day initiative into basic, clinical, and community-based research. This would greatly expand knowledge in the field. The gap between research that proves a program's efficacy or effectiveness and diffusion of that research needs to be filled by partnerships with CDC, the Cooperative Extension Service, and such voluntary organizations as the American Heart Association and American Cancer Society. Field testing of promising interventions and diffusion through national networks would contribute greatly to increased national consumption. NCI is working on several efforts to transfer knowledge gained in the randomized trials to State programs through Small Business Innovation Research grants and collaboration with the American Cancer Society.

The 5 A Day Program should now be integrated with other dietary and health messages, such as increasing grain consumption and engaging in more physical activity. All of these messages could be incorporated into a powerful national campaign. Use of home gardens, farmers markets, and locally grown produce should be encouraged in collaboration with State departments of agriculture and education. An emphasis on preschoolers should be considered, building on such programs as the Head Start project in Connecticut.

The richness of materials developed should not be diminished. Existing clearinghouses, such as the one at NCI, should be better utilized. The Program staff should use information from the process evaluation of State programs to make recommendations to States on how to improve structures and operations. Obtaining more synergy from State efforts, including the possibility of regional collaborations, should be explored.

CONCLUSION

The national 5 A Day Program has succeeded in meeting its objectives for the first 5 years: it has created a public/private partnership with a large national infrastructure; it has raised public awareness of the need to eat 5 or more servings of vegetables and fruit a day; it has contributed to increased national consumption levels; and 9 research projects and 25 State-level evaluations have contributed to a better understanding of how to change dietary intakes. The Program has been perceived as a resounding success—25 countries attended the first international meeting in Washington, DC, in 1998, and many of these countries are implementing their own versions of the Program. With such a past, the Program has a bright future—if the public/private partners make renewed commitments to the Program, if adequate resources are forthcoming, and if the joint vision for the future is creative enough.

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